WHAT IS CLAIMED IS:

1.   A method for retrieving data, comprising:

rotating a storage media having a substrate comprising at least one plastic resin portion and at least one data layer disposed on at least one surface of said substrate, wherein said substrate has a surface roughness of less than about 10Å and an axial displacement peak of less than about 500 μ under shock or vibration excitation;

directing an energy field at said storage media such that said energy field is incident upon the data layer before it can be incident upon the substrate; and

retrieving information from the data layer via said energy field.

2.   The method for retrieving data as in Claim 1, further comprising passing at least a portion of said energy field through the data layer, and reflecting said portion of said energy field back through the data layer.

3.   The method for retrieving data as in Claim 1, further comprising rotating said storage media at a variable speed.

4.   The method for retrieving data as in Claim 1, wherein said data layer has a coercivity of greater than about 1,500 oersted.

5.   The method for retrieving data as in Claim 1, wherein said substrate has an areal density greater than about 6 Gbits/in^2.

6.   The method for retrieving data as in Claim 5, wherein said substrate has an areal density greater than about 10 Gbits/in^2.

7.   The method for retrieving data as in Claim 6, wherein said substrate has an areal density greater than about 25 Gbits/in^2.

8.   The method for retrieving data as in Claim 1, wherein said substrate further comprising surface features disposed on at least one surface of said substrate, between said substrate and said data layer.

9. The method for retrieving data as in Claim 8, wherein said surface features are selected from the group consisting of pits, grooves, edge features, asperities, and a combination comprising at least one of the foregoing surface features.

10. The method for retrieving data as in Claim 8, wherein said surface features have a replication of greater than about 90% replication of an original master.

11. The method for retrieving data as in Claim 1, wherein said substrate has an edge-lift height of less than about 8 μ.

12. The method for retrieving data as in Claim 11, wherein said substrate has an edge-lift height of less than about 5 μ.

13. The method for retrieving data as in Claim 12, wherein said substrate has an edge-lift height of less than about 3 μ.

14. The method for retrieving data as in Claim 11, wherein said substrate has a mechanical damping coefficient of greater than about 0.04 at a temperature of 24°C.

15. The method for retrieving data as in Claim 14, wherein said substrate has a mechanical damping coefficient of greater than about 0.06 at a temperature of 24°C.

16. The method for retrieving data as in Claim 1, wherein said axial displacement is less than about 150 μ.

17. The method for retrieving data as in Claim 16, wherein said axial displacement is less than about 125 μ.

18. The method for retrieving data as in Claim 17, wherein said substrate has an edge-lift height of less than about 8 μ.

19. The method for retrieving data as in Claim 16, wherein said substrate has a mechanical damping coefficient of greater than about 0.04 at a temperature of 24°C.

20. The method for retrieving data as in Claim 19, wherein said substrate has a mechanical damping coefficient of greater than about 0.06 at a temperature of 24°C.

21. The method for retrieving data as in Claim 1, wherein said substrate has a moment of inertia of less than about 5.5×10^{-3} slug-in^2.

22. The method for retrieving data as in Claim 21, wherein said moment of inertia is less than about 4.5×10^{-3} slug-in^2.

23. The method for retrieving data as in Claim 22, wherein said moment of inertia is less than about 4.0×10^{-3} slug-in^2.

24. The method for retrieving data as in Claim 1, wherein said roughness is less than about 5 Å.

25. The method for retrieving data as in Claim 1, wherein said substrate has a mechanical damping coefficient of greater than about 0.04 at a temperature of 24°C.

26. The method for retrieving data as in Claim 25, wherein said mechanical damping coefficient is greater than about 0.06 at a temperature of 24°C.

27. The method for retrieving data as in Claim 1, wherein a moisture content of said substrate varies less than about 0.5% at equilibrium under test conditions of 80°C at 85% relative humidity after 4 weeks.

28. The method for retrieving data as in Claim 1, wherein said substrate has a resonant frequency of greater than about 250 Hz.

29. The method for retrieving data as in Claim 1, wherein said substrate has a specific gravity of less than about 1.5.

30. The method for retrieving data as in Claim 1, wherein said substrate comprises a material selected from the group consisting of an amorphous, crystalline, semi-crystalline material, and blends, copolymers, mixtures, reaction products, and composites comprising at least one of the foregoing materials.

31. The method for retrieving data as in Claim 30, wherein said substrate further comprises metal.

32. The method for retrieving data as in Claim 30, wherein said substrate comprises a resin selected from the group consisting of partially hydrogenated polystyrene, a poly(cyclohexyl ethylene), poly(styrene-co-acrylonitrile), poly(styrene-co-maleic anhydride), and blends, copolymers, mixtures, reaction products, and composites comprising at least one of the foregoing resins.

33. The method for retrieving data as in Claim 1, wherein said plastic resin portion comprises a resin selected from the group consisting of polyvinyl chloride, polyolefins, polyesters, polyimide, polyamides, polysulfones, polyether imides, polyether sulfones, polyphenylene sulfides, polyether ketones, polyether ether ketones, ABS resins, polystyrenes, polybutadiene, polyacrylates, polyacrylonitrile, polyacetals, polycarbonates, polyphenylene ethers, ethylene-vinyl acetate copolymers, polyvinyl acetate, liquid crystal polymers, ethylene-tetrafluoroethylene copolymer, aromatic polyesters, polyvinyl fluoride, polyvinylidene fluoride, polyvinylidene chloride, tetrafluoroethylene fluorocarbon polymer, and blends, copolymers, mixtures, reaction products, and composites comprising at least one of the foregoing resins.

34. The method for retrieving data as in Claim 1, wherein said substrate further comprises metal.

35. The method for retrieving data as in Claim 34, wherein said plastic resin portion is a film having a thickness of less than about 50μ.

42

36. The method for retrieving data as in Claim 35, wherein said thickness is less than about 20μ.

37. The method for retrieving data as in Claim 1, wherein said substrate further comprises reinforcement selected from the group consisting of fibers, whiskers, fibrils, nanotubes, particulate, and combinations comprising at least one of the foregoing reinforcements.

38. The method for retrieving data as in Claim 37, wherein said substrate further comprising reinforcement selected from the group consisting of metal, plastic, mineral, ceramic, glass, and combinations comprising at least one of the foregoing reinforcements.

39. The method for retrieving data as in Claim 1, wherein said substrate has a substantially constant thickness.

40. The method for retrieving data as in Claim 1, wherein said substrate has a varied thickness.

41. The method for retrieving data as in Claim 1, wherein said substrate has a cross-sectional geometry selected from the group consisting of concave, convex, tapered, and combinations comprising at least one of the foregoing thickness geometries.

42. The method for retrieving data as in Claim 1, wherein said substrate further comprises a core having a substantially constant thickness.

43. The method for retrieving data as in Claim 1, wherein said substrate further comprises a core having a varied thickness.

44. The method for retrieving data as in Claim 1, wherein said substrate further comprises a core having a cross-selected geometry selected from the group consisting of concave, convex, tapered, and combinations comprising at least one of the foregoing core geometries.

45.   The method for retrieving data as in Claim 1, wherein said substrate further comprises a core having a core outer diameter substantially equal to a substrate outer diameter.

46.   The method for retrieving data as in Claim 1, wherein said substrate further comprises a core having a geometry selected from the group consisting of at least one radial arm, at least one ring, star-like, and combinations comprising at least one of the foregoing geometries.

47.   The method for retrieving data as in Claim 1, wherein said substrate further comprises a core having at least one hollow cavity.

48.   The method for retrieving data as in Claim 1, wherein said substrate further comprises a core having at least one filled cavity.

49.   The method for retrieving data as in Claim 1, wherein said substrate further comprises a core having multiple portions.

50.   The method for retrieving data as in Claim 49, wherein said multiple portions comprise different materials.

51.   The method for retrieving data as in Claim 1, wherein said substrate further comprises a preformed core.

52.   The method for retrieving data as in Claim 1, wherein said substrate further comprises a core formed in situ with said substrate.

53.   The method for retrieving data as in Claim 1, further comprising at least one insert attached to said substrate.

54.   The method for retrieving data as in Claim 53, wherein said insert comprises a plurality of portions attached to said substrate on a surface of said substrate opposite said data layer.

56.   The method for retrieving data as in Claim 53, wherein said insert comprises a single member having a substantially uniform thickness, said insert attached to said substrate on a surface of said substrate opposite said data layer.

57.   The method for retrieving data as in Claim 1, wherein said substrate has a first modal frequency greater than an operating frequency.

58.   The method for retrieving data as in Claim 1, wherein the substrate possesses a flexural modulus and specific gravity that places the first modal frequency outside of an operating frequency range.

59.   The method for retrieving data as in Claim 1, wherein said substrate has only one modal frequency less than an operating frequency.

60.   The method for retrieving data as in Claim 1, wherein the substrate possesses a flexural modulus of greater than about 250 kpsi.